Quantitative Reasoning

1.- Percentages
2.-Simultaneous Equations
3.- **Symbolism**
4.- Special Triangles
5.- Multiple and Oddball Figures
6.- Mean, Median, Mode, and Range
7.- Probability

Problems of Symbolism

3.1.- If $a \ \Psi \ b = \sqrt{a+b}$ for all nonnegative numbers a and b, what is the value of $10 \ \Psi \ 6$.

a) 2

b) 4

c) 16

d) 8

e) 0

3.2.- If $\mathring{a}y\mathring{a} = y^2 - 1$. What is the value of $\mathring{a}3\mathring{a}$ - $\mathring{a}2\mathring{a}$?

a) 1

b) 2

c) 3

d) 4

e) 5

3.3.- If x is even, $@x = 3x - 3$; if x is odd, $@x = 2x - 2$. What is the value of $@(@(@5))$?

a) 21

b) 40

c) 63

d) 6

e) 7

3.4.- If $a \neq 0$, let $\star a$ be defined by the equation $\star a = a - \frac{1}{a}$. Then $\star(-3) =$

a) $\frac{-10}{8}$

b) $\frac{-8}{3}$

c) $\frac{1}{3}$

d) $\frac{8}{3}$

e) $\frac{10}{3}$

3.5.- If $m \divideontimes n = 2m^2 - 3n$, what is the value of $4 \divideontimes 8$?

a) 2

b) 4

c) 8

d) 12

e) 16

3.6.- If $c \circledS d = \frac{c-d}{c}$, where $c \neq 0$, what is the value of $12 \circledS 3$?

a) -3

b) $\frac{1}{4}$

c) $\frac{2}{3}$

d) $\frac{3}{4}$

e) 3

3.7.- If the operation is defined for all x and y by the equation x y = 2*x*y, then 3 (4 5) =

a) 80

b) 120

c) 160

d) 240

e) 360

2.8.- If $e + f = 0$ and $e + 123 = 2f$, then $e =$?

a) 41

b) -41

c) 21

d) -21

e) 0

2.9.- If $y = 2x$ and $x + y = 12$, then $x =$?

a) 0

b) 1

c) 2

d) 3

e) 4

3.10.- If $g \blacktriangleright h = 7g - 3h$, what is the value of $a + 5 \blacktriangleright a + 3$?

a) $4a - 4$

b) $4a + 8$

c) $4a + 14$

d) $4a + 26$

e) $4a + 44$

3.11.- If $r \otimes s = r(r - s)$ for all integers r and s, then $4 \otimes (3 \otimes 5) =$?

a) -8

b) -2

c) 2

d) 20

e) 40

3.12.- If $a\ \Sigma$ means to multiply a by 3 and $a\ \theta$ means to divide a by -2, what is the value of $((8\ \Sigma)\ \theta)\ \theta$?

a) -6

b) 6

c) 3

d) 2

e) 0